Bluetooth ISDN Terminal Adapter

BlueTA+

User manual

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1 Introduction

1.1 Product description

BlueTA+ is a Bluetooth ISDN terminal adapter. It is used to connect a Bluetooth terminal device — such as a PC — to an ISDN line. This allows the terminal device to use ISDN services, e.g. in order to

- Connect to the Internet
- Connect to a remote LAN
- Transfer data

When establishing Internet connections, the BlueTA+ supports the following procedures and protocols:

- Synchronous PPP or Multilink PPP
- X.75 B-channel protocol

Which procedure/protocol is the correct one depends on the Internet service provider or access point (point of presence or POP).

This documentation is valid for the BlueTA+

- Hardware revision V2
- Software versions V2.420 or later

What Is Bluetooth?

Bluetooth facilitates wireless communication between two devices over short distances (up to approximately 10 meters/35 feet). Bluetooth technology replaces connections normally used to connect devices such as an ISDN terminal adapter and a PC. Bluetooth allows users to dispense with cables, giving them more flexibility to position terminal devices exactly where needed.

Once a Bluetooth radio link is established, Bluetooth activity is transparent. This means that if, for example, you want to establish an Internet connection to look up a page with your browser program, your application works in exactly the same way it would if you were using a conventional cable connection instead of Bluetooth.

1.1.1 Prerequisites

To use the BlueTA+ you need:

- An ISDN connection.
- A Bluetooth-ready data terminal device such as a PC, notebook computer or PDA with a Bluetooth adapter. The Bluetooth adapter must support the Dial-Up networking profile (Bluetooth V1.1).

1.1.2 Parts included

The BlueTA+ comes with the following components:

- 1 BlueTA+ ISDN terminal adapter in a desktop housing
- 1 AC adapter for powering the BlueTA+
- 1 ISDN cable for connecting the BlueTA+ to an ISDN line
- 1 CD-ROM containing installation software for Windows 98/Me/2000/XP
- 1 user manual

1.1.3 Safety, License

The BlueTA+ is conform to the European safety requirements IEC 60 950. Please use only the delivered power supply or an original replacement from Stollmann.

The BlueTA+ is conform to the European rules of EMC. EN55022 Class B for electromagnetic field emission and EN55024 for immunity against electromagnetic interference.

The BlueTA+ is conform to the Bluetooth standard V1.0b.

The BlueTA+ is conform to CCITT I.430 and ETSI TBR3/A1

1.2 Working with the BlueTA+

1.2.1 Getting started

To start using the BlueTA+ follow these steps:

1. Connect the device: (a) to the ISDN line and (b) to a standard AC outlet (see "Connecting the Device" on page 8.)
2. The yellow LED on the BlueTA+ front panel will stay flashing to indicate that the device has been connected to an ISDN line.
3. Optionally: Install the software (see "Installing the Software" on page 8). Start the Bluetooth control program of your Bluetooth adapter (not included with the BlueTA+). Establish a Bluetooth radio link to the BlueTA+ (see description at the bottom of this page).
4. Optionally: Configure the BlueTA+ Bluetooth interface if needed. Configuration is required especially if you want to enable unrestricted access to the BlueTA+. See "Configuring the BlueTA+ Bluetooth interface" on page 11.
5. Optionally: If you want or need to use BlueTA+ ISDN settings other than the factory settings, configure the ISDN interface. See "Configuring the BlueTA+ ISDN interface" on page 16.
6. If you are using BlueTA+ for the first time: Convert your existing dial-up connections or define a new dial-up connection. See "Dial-Up Networking: New Data Transfer Device" on page **Fehler! Textmarke nicht definiert.**.

Now you can work with all applications using an ISDN connection.

1.2.2 Establishing a Bluetooth connection to the BlueTA+

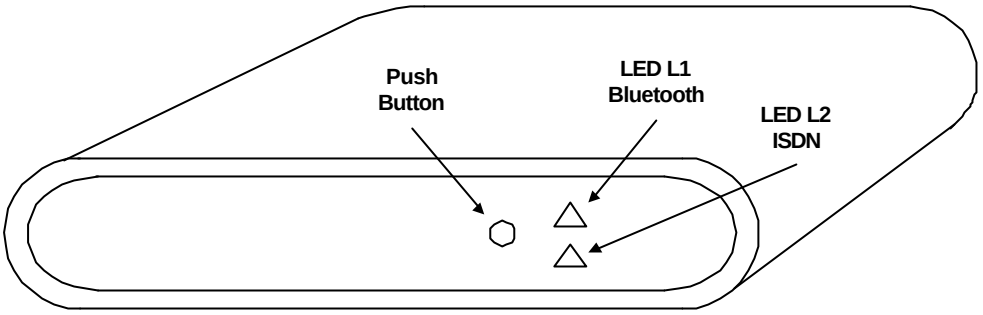
Start the Bluetooth control program of your Bluetooth adapter (not included with the BlueTA+) and then proceed as follows:

1. Issue the Inquiry command to search for any Bluetooth devices. If the search was successful: The control program will list the names of the Bluetooth devices found. The BlueTA+ is factory preset with the name **"Stollmann BlueTA+"**.
2. Highlight this name, and select **Dial-Up Networking** from among the services offered for this device.
3. Issue the command to establish a connection with this service using a virtual COM port.

The green LED on the BlueTA+ front panel will come on to indicate that the Bluetooth connection with the BlueTA+ has been established.

Note: If your application needs an ISDN connection, you must always first establish the Bluetooth connection to the BlueTA+. This is also true if you wish to configure the BlueTA+. To do so, start the control program for your Bluetooth adapter. Then issue the command for establishing the connection.

1.2.3 LEDs and pushbutton



Two LEDs — green and yellow — on the BlueTA+ front panel indicate the device's operational and error status.

Any error status is indicated by ⚠.

Green LED L1 for Bluetooth	
Fast Flashing together with L2 (app. 4 seconds)	Status after turning on the BlueTA+.
Blinking (50:50) 1 s cycle	BlueTA+ ready; no Bluetooth connection.
On	Bluetooth connection active.
Off	Device turned off (no power). OR ⚠ BlueTA+ is not operational. Hardware error; repair required.
Fast Flashing while pressing pushbutton	Press till flashing stops, to enter Log-on window.
Flashing (20:80, max. 1 minute): Pulse group with n pulses	Log-on window open. A Bluetooth-enabled terminal device may be registered for log-on slot n. See "Registering a terminal device in the "Limited access": " on page 13.
Fast Flashing together with L2 (continuously)	⚠ Boot loader active; no firmware present.

Yellow LED L2 for ISDN	
Fast Flashing together with L1 (app. 4 seconds)	Status after turning on the BlueTA+.
Blinking (50:50) 1 s cycle	BlueTA+ connected to ISDN (activated).
Off	Device turned off (no power). OR ISDN line deactivated.
On	BlueTA+ has established one or two ISDN connections.
Fast Flashing together with L1 (continuously)	Boot loader active; no firmware present.

The pushbutton on the front panel lets you:

- Restore the adapter to its factory default settings: Disconnect device from power. Press pushbutton, turn on the device and hold pushbutton pressed for at least 10 seconds.

OR

- Make the BlueTA+ ready for registering, when operating in restricted mode. For more information, see "Configuring the BlueTA+ Bluetooth Interface" on page 11.

2 Installation

2.1 Connecting the device

- Use the ISDN connection cable (included) to connect the BlueTA+ ISDN port with your ISDN line (S_0 bus).
- Connect the AC adapter (included) to the BlueTA+, and plug it into a properly installed AC socket. The device is initialized and ready to use.

The yellow LED on the BlueTA+ front panel will blink to indicate that the device has been connected to an ISDN line.

2.2 Installing the software

For a Windows computer, you may install the software included with the BlueTA+. The following items are installed on your data terminal device (PC, notebook computer, etc.):

- Device driver and Modem list
- Configuration utility

Prerequisites

For your data terminal device you will need:

- a fully configured Bluetooth adapter (not included)
- a CD-ROM drive
- Windows 98/ME/2000/XP as an operating system
- The operating system installation CD (usually not required for Windows ME/2000/XP).

2.2.1 Installing the software for Windows 98/ME

1. Insert the software disk in your disk drive.
2. Establish the Bluetooth connection with the BlueTA+. To do so, start the control program of your Bluetooth adapter and issue the command for establishing the connection. See page 5.
3. If the CD-ROM will not start automatically then please execute the SETUP.EXE program on your disk. To do so, click **Run...** on the Windows start menu. Click **Browse**, and change to CD-ROM drive (usually D:\ or E:\). Double-click the icon for the SETUP.EXE file. Then click **OK**.
4. Follow the instructions of the installation program. You may configure the BlueTA+ either now or at some later point.

The following modems will be automatically installed:

- BlueTA+ X.75 (Win98,Me)
- BlueTA+ Internet PPP (Win98,Me)
- BlueTA+ Internet ML-PPP (Win98,Me)

Following software installation, you will find a new program folder called **BlueTA** under **Programs** in the Windows start menu You may now use the BlueTA+Manager to configure your BlueTA+ (see "Configuring using the BlueTA+Manager on page 11).

2.2.2 Installing the software for Windows 2000/XP

1. Insert the software disk in your disk drive.
2. Establish the Bluetooth connection with the BlueTA+. To do so, start the control program of your Bluetooth adapter and issue the command for establishing the connection. See page 5.
3. If the CD-ROM will not start automatically then please execute the SETUP.EXE program on your disk. To do so, click **Run...** on the Windows start menu. Click **Browse**, change to CD-ROM drive (usually D:\ or E:\). Double-click the icon for the SETUP.EXE file. Then click **OK**.
4. Follow the instructions of the installation program. You may configure the BlueTA+ either now or at some later point.

The following modem will be automatically installed:

- BlueTA+ (Win2000,XP)

Following software installation, you will find a new program folder called **BlueTA** under **Programs** in the Windows start menu. You may now use the BlueTA+Manager utility to configure your BlueTA+ (see "Configuring using the BlueTA+Manager on page 11).

2.3 Dial-Up Networking: New Data Transfer Device

2.3.1 Configuring new modem entries for existing Dial-up connections

Following installation of the driver software, a new device (modem) is available on your system for all ISDN connections you have defined: BlueTA+. To make existing connections use this device, proceed as follows:

Double-click the **Dial-Up Networking** or **Network and dial-up-connections** icon. (You will usually find it in the **My Computer** folder or in the **Control Panel.**) Dial-up connections already defined are each indicated by their own icons. Right-click on an icon to open the corresponding pop-up menu. Left-click on **Properties** to open the **Properties** dialog. Select the BlueTA+ from **Connect using...** on the **General** tab.

2.3.2 New Dial-Up connection

The data and settings of ISDN connections are stored on your computer in the **Dial-Up Networking** or **Network and dial-up-connections** folder. (You will usually find it in the **My Computer** folder or in the **Control Panel.**) To define a new connection, e.g. to an Internet service provider, you must create a new dial-up connection. To do so, you must know and enter the appropriate connection data, which you can obtain from your service provider. These data usually include:

- Number to dial for the provider's access point
- Transfer protocol (usually Internet PPP for Internet connections)
- User name
- Password

Instructions on how to create a new dial-up connection to the Internet are available in your Windows documentation. As a rule, you may simply proceed as follows:

Double-click the **Dial-Up Networking** or **Network and dial-up-connections** icon. (You will usually find it in the **My Computer** folder or in the **Control Panel.**) Double-click the **Make new connection** icon. Follow the instructions on the screen. Select "BlueTA+" under **Connect using...**

2.4 Uninstalling the Software

To uninstall the BlueTA+ Software from your computer, click the **Uninstall Stollmann BlueTA+** icon in the BlueTA+ program folder.

3 Configuring the BlueTA+

3.1 Configuring the BlueTA+ Bluetooth interface

When configuring the BlueTA+ Bluetooth interface, you can restrict BlueTA+ access to those Bluetooth-enabled terminal devices that are specifically authorized by you.

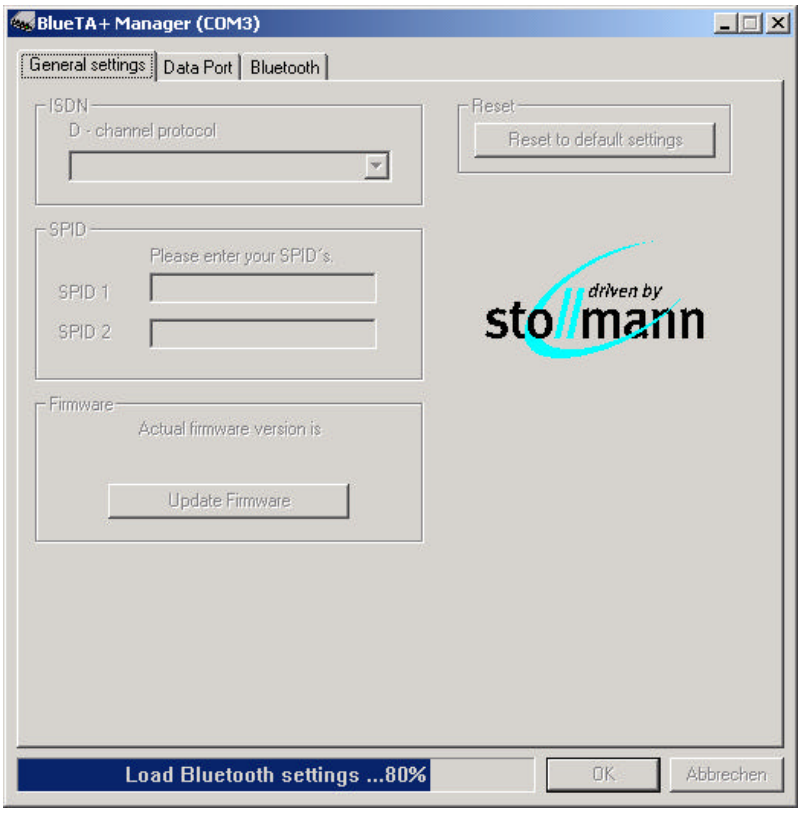
You may configure the BlueTA+ as follows:

- Using any terminal emulation program—such as HyperTerminal (included with Windows)—by way of AT commands
- Using the BlueTA+ Management Application (recommended), if your operating system is Windows and you have the BlueTA+Manager installed.

3.1.1 Configuring using the BlueTA+Manager

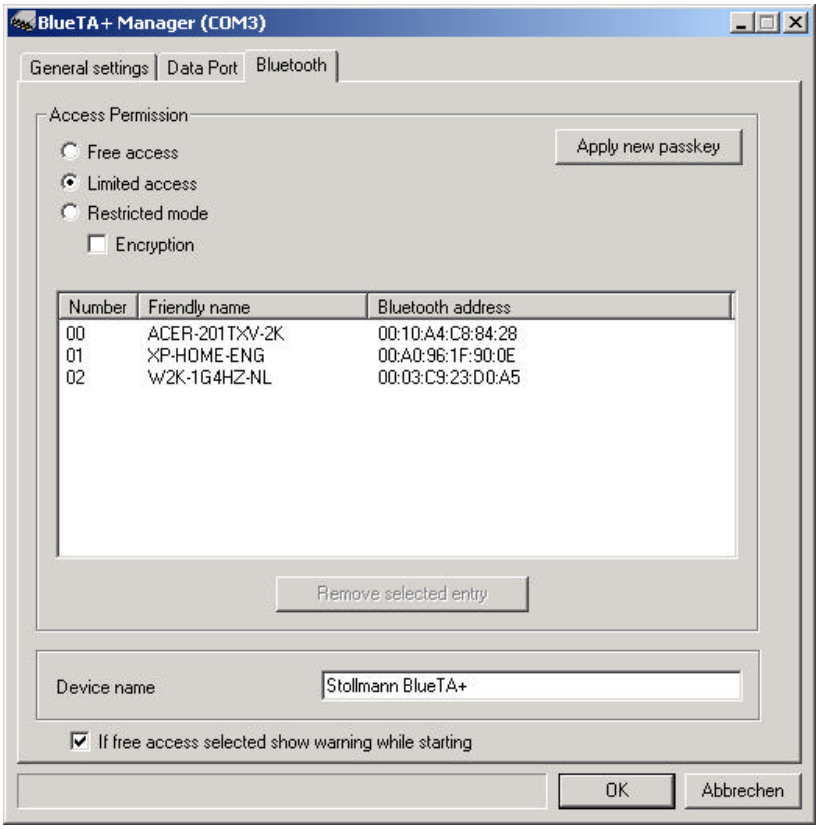
First, establish a Bluetooth connection with the BlueTA+ (see page **Fehler! Textmarke nicht definiert.**). Then start the BlueTA+Manager.

The BlueTA+Manager starts by reading the BlueTA+ configuration data. This may take up to 5 seconds.



Click the **Bluetooth** tab in case if not selected.

Edit the entries in the dialog (see explanations below). Then confirm your settings by clicking **OK**.



Bluetooth tab of the BlueTA+ Manager

Security Modes

The BlueTA+: can be operated in 3 different Security Modes:

- **Free access**: Every Bluetooth device with corresponding profiles within the range of the BlueTA+ (about 10 m, 35 feet) can get access to ISDN. The user does not need to know the PIN nor to have direct access to the BlueTA+. A registering is not necessary.

- **Limited access**: Only those Bluetooth devices which are paired with the BlueTA+, can get access to ISDN. To do the registering it is necessary to know the PIN.

- **Restricted mode**: This setting implies that any Bluetooth adapter within a radius of approximately 10 meters/35 feet has to register to the BlueTA+. To make the BlueTA+ ready for registering please press the pushbutton. For registering the correct PIN code is required.

  The activated security mode is shown in the Bluetooth tab of the BlueTA+ Manager.

Set PIN code

The PIN code by default is set to **0000**.

To define a new PIN code, you must enter the old PIN code in the upper fields and the new PIN code in the lower two fields.

Effect:

The Bluetooth connection is interrupted. From that point onward, only those Bluetooth-enabled terminal devices can establish a Bluetooth connection with the BlueTA+ that are registered with the BlueTA+ - see below.

Registering a terminal device in the “Limited access”:

With limited access activated, only those Bluetooth-enabled terminal devices can establish a Bluetooth connection with the BlueTA+ that are registered with the BlueTA+, see below. To register a terminal device, proceed as follows:

1. Use the terminal device to be registered to establish a Bluetooth connection with the BlueTA+. To do so, start the Bluetooth adapter control program on that device and issue the command for establishing the connection—see page 5. When prompted to enter a PIN code, enter the current BlueTA+ PIN code.

This completes the registration of this terminal device. The BlueTA+ creates a key from the device ID of the Bluetooth adapter of the respective terminal device and the valid PIN code entered and stores it in the open log-on slot. This will let the BlueTA+ know that terminal device now has the right to access it.

Effect:

The log-on slot selected in Step 1 contains the access key for this terminal device. The device can now establish a Bluetooth connection with the BlueTA+.

If you would like to register another terminal device, simply repeat Step 1. The key of the other terminal device will be stored automatically on the next free log-on slot. If all log-on slots are occupied, the log-on slot will be overwritten beginning with slot 1. You can register up to 10 different Bluetooth-enabled terminal devices.

(Changing the PIN code after a device is registered does not invalidate the registration for that terminal device.)

Registering a terminal device in the “Restricted mode”:

With restricted mode activated, only those Bluetooth-enabled terminal devices can establish a Bluetooth connection with the BlueTA+ that are registered with the BlueTA+, see below. To register a terminal device, proceed as follows:

2. Press the pushbutton on the BlueTA+ front panel (the Bluetooth LED will start flashing) till the Bluetooth LED stays on. This will open a "registration window" for one minute.

3. Use the terminal device to be registered to establish a Bluetooth connection with the BlueTA+. To do so, start the Bluetooth adapter control program on that device and issue the command for

establishing the connection—see page 5. When prompted to enter a PIN code, enter the current BlueTA+ PIN code.

This completes the registration of this terminal device. The BlueTA+ creates a key from the device ID of the Bluetooth adapter of the respective terminal device and the valid PIN code entered and stores it in the open log-on slot. This will let the BlueTA+ know that terminal device now has the right to access it.

Effect:

The log-on slot selected in Step 1 contains the access key for this terminal device. The device can now establish a Bluetooth connection with the BlueTA+.

If you would like to register another terminal device, simply repeat Steps 1 and 2. In Step 1 the key of the other terminal device will be stored automatically on the next free log-on slot. If all log-on slots are occupied, the log-on slot will be overwritten beginning with slot 1. In Step 2, use the other terminal device to be registered to establish a Bluetooth connection with the BlueTA+.

You can register up to 10 different Bluetooth-enabled terminal devices.

(Changing the PIN code after a device is registered does not invalidate the registration for that terminal device.)

Deleting Log-On slot values (access rights)

If you want to prevent a previously registered terminal device from further accessing the BlueTA+, use the BlueTA+Manager (**Bluetooth** tab) to issue the command to remove the registration for that particular log-on slot.

Effect:

The terminal device whose access right was canceled from its log-on slot can no longer establish a Bluetooth connection with the BlueTA+.

Changing device names

If you would like your BlueTA+ to appear in your Bluetooth control program under a different device name, use the **Bluetooth** tab of the BlueTA+Manager to enter the new name in the respective field.

Forgotten Pin Code: Restoring the Bluetooth interface to factory defaults

To change the PIN code for Bluetooth access, you must know the current PIN code. If you have forgotten the PIN code, the only thing you can do is to reset the BlueTA+ to its factory default settings.

To restore the BlueTA+ to its factory default settings, proceed as follows:

1. Disconnect the BlueTA+ from its power source.
2. Press the pushbutton on the BlueTA+ front panel
3. Restore power to the device while keeping the pushbutton pressed for at least 10 seconds.
4. When Bluetooth factory defaults will be set up the LEDs will stop flashing.

Effect:

- The PIN code is reset to **0000.**
- The device name is reset to **Stollmann BlueTA+**.

- All log-on slots are evacuated. The security mode is switched to default.

Note: Concurrent access of several terminal devices is not possible in an of the security modes.

3.1.2 Configuring using a terminal emulation and AT commands

See "AT commands" on page 18.

3.2 Configuring the BlueTA+ ISDN interface

By configuring the ISDN interface of the BlueTA+, you can determine the behavior of the ISDN communication. The factory default settings should be workable in almost all situations. If you do make changes to these settings, make sure that the new settings agree with those required by the remote system.

You may configure the BlueTA+ as follows:

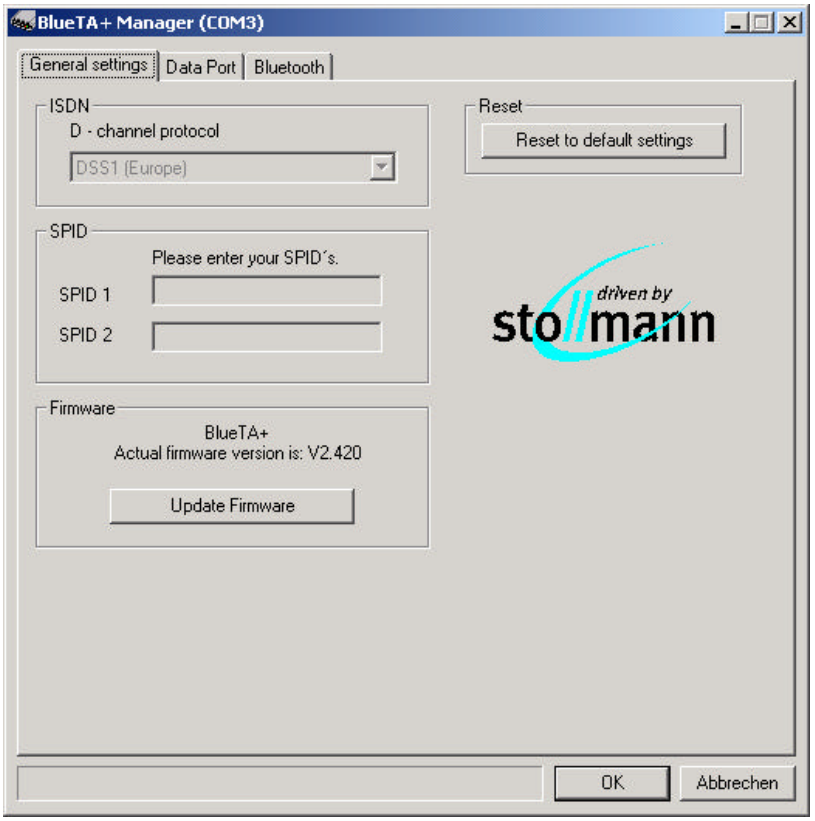
- Using the BlueTA+Manager (recommended), if your operating system is Windows and you have the BlueTA+Manager installed.
- Using any terminal emulation program – such as HyperTerminal (included with Windows) – by way of AT commands. You can use AT commands to change settings that cannot be accessed with the BlueTA+Manager.
- Remote configuration via an ISDN connection with your BlueTA+. You have to set up an ISDN connection from an ISDN Terminal Adapter by using a terminal emulation program.

3.2.1 Configuring using the BlueTA+Manager

Establish the Bluetooth connection with the BlueTA+. Then start the BlueTA+Manager.

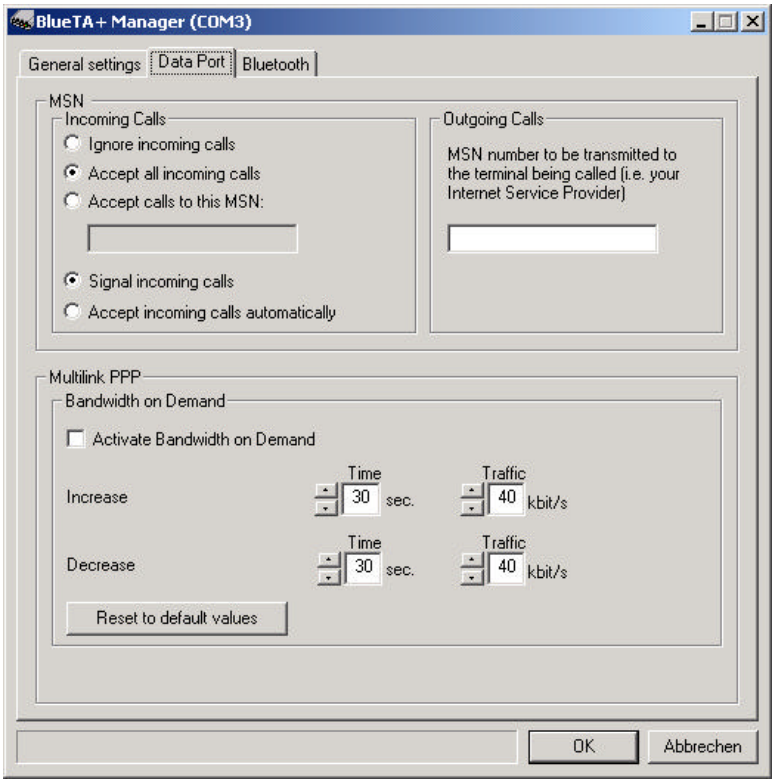
The BlueTA+Manager starts by reading the BlueTA+ configuration data. This may take up to 5 seconds.

Most basic settings can be selected on the **General Settings** tab.



General Settings tab of the BlueTA+ Manager

Change the D-channel protocol only if you are planning to use the BlueTA+ in a different telephone network with a different type of ISDN implementation than E-DSS1.



Data Port tab of the BlueTA+ Manager

Call answering

On the **Data Port** tab of the BlueTA+Manager, you can determine what incoming calls, if any, the BlueTA+ is to answer.

If the BlueTA+ is to answer only calls arriving for a specific MSN, select the **Accept incoming calls only for this MSN** option and indicate the MSN in the field below.

The setting **Accept all incoming calls** (default) causes the BlueTA+ to answer all incoming data calls. Incoming voice or fax calls are passed unhindered to other terminal devices—if connected—and can then be answered by these devices (phone, fax machine, etc.).

Dynamic use of the second B channel (MLPPP channel bundling)

Activating the **Bandwidth on Demand (BOD)** option on the **Data Port** tab of the BlueTA+Manager has the following effect:

In situations where large data volumes are to be transferred, the second B channel of your ISDN line is automatically used so that twice as many data per time unit can be transferred. Note the following details:

- The B channel is added automatically when the data stream exceeds a certain threshold volume **(Traffic)** for a certain duration **(Time)**. This threshold volume can be set in "**Increase"**.
- The B channel is dropped automatically when the data stream falls below certain threshold volume **(Traffic)** for a certain duration **(Time)**.. This threshold volume can be set in **"Decrease"**.

The Bandwidth on Demand function optimizes your ISDN line usage for data transfers.

Only necessary using Windows95:

Passwords for CHAP and MSCHAP

Depending on the underlying authorization technology—CHAP or MSCHAP—, the RAS password may have to be repeated during RAS sessions for accessing the second B channel. In this case, please the AT command **AT**CHAP** to setup the password (see page 18).

Options (available with a later release):

Answering calls while the second B channel is in use

Activating the **Call bumping** option on the **Data Port** tab of the BlueTA+Manager has the following effect:

If both B channels are in use and the BlueTA+ recognizes an incoming call for an MSN that is different from that of the BlueTA+, the BlueTA+ immediately relinquishes the second B channel used, freeing this channel for a different device—such as a phone—answering the call.

Your ISDN provider must support the call bumping function for your line.

3.2.2 Configuring using a terminal emulation and AT commands

See "AT commands" on page 18.

3.3 AT commands

Use the AT commands (listed from page 20) to configure

- the Bluetooth interface or
- the ISDN interface

of the BlueTA+. The BlueTA+Manager for Windows is a user-friendly configuration interface. However, you can use any terminal emulation program (under Windows or other operating systems) to issue AT commands for configuring the BlueTA+. You can also use AT commands to change settings that cannot be accessed by the BlueTA+Manager.

3.3.1 Local configuration (Bluetooth)

First, establish a Bluetooth connection to the BlueTA+ (see page 5).

Start any terminal emulation program – such as HyperTerminal (included with Windows).

If no connection with the BlueTA+ is defined in this terminal program, do so now:

1. Select a direct connection via the virtual COM interface by which your Bluetooth adapter is addressed.
2. Connection settings (transfer rate, data bits, parity, stop bits) are not relevant and may have any setting.

Activate the connection with the BlueTA+ by entering “AT” and the Return key.

Activate the desired settings by issuing the corresponding AT commands (see below).

3.3.2 Remote configuration (ISDN)

You may use a remote computer to configure your local BlueTA+ via an ISDN connection as long as the remote system also uses a BlueTA+ or other terminal adapter by Stollmann to establish the connection. To dial into the local BlueTA+, use the AT command **AT<number>e** (for <number>, insert the ISDN number of your local BlueTA+ without the angled brackets < >.)

The "e" at the end of the number tells the local BlueTA+ that remote configuration is about to take place.

Any BlueTA+Configuration command (see below) issued by the remote system after the connection is established will take effect for the local BlueTA+.

Note: The X.75 (ATB10) protocol must be used for remote configuration.

3.3.3 Guidelines for entering AT commands

Type every command exactly as shown and then press the Return key. The Return key is represented in the following examples by the graphic character ↵.

Example:

ATB10 ↵	Switches to the protocol X.75
AT&W ↵	Saves the new configuration

The BlueTA+ acknowledges receipt of a command at ISDN settings with either OK or an error message.

Every command (with the exception of A/) starts with AT, followed by one or more parameters. Each command line can be up to 80 characters long. Longer command lines are not accepted. Spaces are ignored. Uppercase and lowercase letters can be used interchangeably. With the Backspace key you can delete characters inside a command line.

If you wish to issue AT commands while an ISDN data connection is active, you will first have to change to command mode:
Following a pause of at least one second, type **+++** (three plus characters). Do not press the Return key. Do not wait more than one second between the + characters. Wait at least one second after the third + character.
The BlueTA+ will change to command mode and responds with OK.

The ATO command returns BlueTA+ to transfer mode.

Storing a configuration

To store configuration settings, issue the command AT&W.

This will store the current setting in the BlueTA+ memory so they are automatically reapplied even if the device is turned off and back on again.

3.3.4 AT commands for Bluetooth

In the following tables, factory default settings are indicated in **boldface**.

Items in angled brackets < > are to be replaced by the actual or desired values or parameters. The angled brackets themselves are not entered. Example: For <old_PIN_code> enter the old PIN code.

A detailed description of all possible settings is given under "Configuring using the BlueTA+" on page 11.

Command	Explanation
AT**BPIN=<old_PIN-code>,<new_PIN_code> Changes the PIN code. For <old_PIN_code>, enter the old pin code. For <new_PIN_code>, enter the new pin code. The old PIN code must be correct for the command to take effect. The factory default Bluetooth PIN code is **0000**, 4 digit number.	
AT**?BPIN	Displays help for Bluetooth PIN codes.
AT**BNAME	Displays the device name.
AT**BNAME=<name>	Defines the device name. <name> is shown on a remote Bluetooth terminal device during a Service Discovery sequence It is a string constant according to V.250.
AT**?BNAME	Displays help for assigning device names.
AT**BOAD	Displays the Bluetooth address of this device.
AT**BRNAME	Displays the device name of the connected Bluetooth device.
AT**BLDEL=<n>	Deletes the settings for log-on slot n (n=1..10).
AT**?BLDEL	Displays help for log-on slots.
AT**BRESTR	Displays the current setting restricted mode.
AT**BRESTR=1	Activates restricted mode.
AT**BRESTR=0	Deactivates restricted mode.
AT**?BRESTR	Displays help for restricted mode.
AT+GCAP	Displays a list of possible settings. The device responds with an empty list.
AT+GMI	Displays the manufacturer's name. Response: Stollmann GmbH
AT+GMM	Displays the model name. Response: BlueTA+
AT+GMR	Displays the revision ID. Response: varies according to revision number
ATDT	Sets device to tone dialing. Does not actually have any effect. Response: OK
ATDP	Sets device to pulse dialing. Does not actually have any effect. Response: OK

3.3.5 AT commands for the ISDN interface

Typographic conventions:

Items in angled brackets < > are to be replaced by the actual or desired values or parameters. The angled brackets themselves are not entered.

Items in square brackets [ ] are options. The square brackets themselves are not entered!

Factory default settings are indicated in **boldface**.

Command	**Explanation** (defaults in **boldface**)	
A/	Repeats input of the previous command line.	
ATA	If the device is not configured to automatically answer incoming calls (register S0=0), this command is used to manually answer an incoming call. (Must be the last command in a multiple command line.) Incoming calls are shown by a display of RING or 2 . Example: ATA	
ATB	Selects the B-channel protocol.	
	ATB3	Conversion of HDLC asynchronous to synchronous (PPP asynchronous, single connection, e.g. for dial-up connection for network or Internet access).
	ATB4	HDLC transparent (Octets packaged in HDLC frames)
	ATB5	Byte-transparent (raw B channel data)
	ATB10	X.75-NL (e.g. for BBS access)
	ATB31	Multilink PPP (ML-PPP)
AT&C	DCD control. Determines the behavior of the DCD control line of the BlueTA+.	
	AT&C	DCD for the BlueTA+ is always ON.
	AT&C	If DCD is ON, this indicates that an ISDN connection has been established and synchronized.
AT#C	Shows the bearer service used for incoming calls. Displayed in hexadecimal notation <hbhb>" The value of <hbhb> (word) is the CIP value as defined in the CAPI 2.0 specification and published on the Stollmann web site at *www.stollmann.de*.	
AT#C1=<hbhb>	Shows the bearer service used for outgoing calls. The value of <hbhb> (word) is the CIP value as defined in the CAPI 2.0 specification Example: For outgoing voice calls: AT#C1=0004	

Command	**Explanation** (defaults in **boldface**)	
AT#C2= <hbhbhbhb>	Selection of the bearer service for incoming calls. Determines which bearer services are accepted for incoming calls. The value of <hbhbhbhb> (word) is the CIP value as defined in the CAPI 2.0 specification (default: 00000004). Example: AT#C2=00030012 : Only analog calls are answered. AT#C2=00000001 : All calls are answered. **Notes:** The command AT#C1 must be issued before an outgoing call. The command AT&F restores the factory default settings, so that the default bearer services can be once again used	
ATD<number>	Dialing command The dial string <number> is dialed. The string may contain dialing prefixes such as W > P T ; @. (Must be the last command in a multiple command line.) If a character is entered while BlueTA+ is dialing, the dialing process is aborted. Possible dialing command: ATD<number>	
	<number>	Number to be dialed. ISDN number for B-channel dial-up connection or X.25 number for X.31 D channel.
	ATD<number>e	Dials <number> from a remote location to perform administrative tasks an. The "e" at the end of the number indicates that remote configuration of the BlueTA+ is about to take place. The X.75 (ATB10) protocol must be used.
AT&D	DTR control Controls the behavior of the BlueTA+ in the event that the DTE control line DTR goes from ON to OFF.	
	AT&D	The DTR status change by the DTE control line is ignored.
	AT&D2	The device responds to the DTR status change by the DTE control line. If DTR goes to OFF, any existing ISDN connection is terminated. Incoming calls are answered only if DTR is ON.
ATE	Or: ATE0. Turn off local (screen) character echoing.	
ATE1	Turn on local (screen) character echoing.	
AT&F	Restore factory defaults. This command does not overwrite ISDN protocol settings or MSNs. If the factory default settings are to remain in force next time the device is cycled off and on, use the AT&W command to store the settings.	
	AT&F	Restores all parameters related to data port settings.
	AT&F1	Resets all parameters to factory default, including those related to settings and values for ISDN and Bluetooth behavior, MSNs, passwords and pin codes.
ATH	Terminates the ISDN connection (hanging up)	
	ATH	Terminates connection or refuses incoming call.
ATI	Shows firmware information such as the firmware version number and certain settings:	

Command	Explanation (defaults in **boldface**)	
	ATI	Displays the modem type; name of the terminal adapter: "BlueTA+"
	ATI1	Displays "0"
	ATI2	Displays OK
	ATI3	Displays firmware version string: i.e. "V2.200"
	ATI4	Displays the manufacturer name: "Stollmann GmbH"
	ATI5	Displays the selected ISDN protocol: "0-DSS1"
	ATI6	Displays the copyright string: "© Copyright Stollmann GmbH"
	ATI7	Displays OK
	ATI8	Displays ERROR
	ATI9	Displays the Plug & Play string
	ATI77	Displays the boot loader string
	ATI99	Displays the software creation date
AT&K	Data flow control. Determines how the BlueTA+ controls the flow of data between the data terminal device (computer) and the BlueTA+ during data communications.	
	AT&K	No local data flow control.
	AT&K3	Local data flow control with hardware handshake RTS/CTS
AT#M	Displays CLID—Called Line Identification. The number (MSN) of the remote station that is transmitted to the remote station via the S_0 Bus along with the incoming call itself.	
ATO	Changes to transfer mode. If the BlueTA+ was set tom command mode by +++, this command returns the device to transfer mode. (Must be the last command in a multiple command line.)	
AT#O	Displays the CLIP – Calling Line Identification Presentation. This is the number (MSN) of the calling remote system.	
ATQ	Suppresses the display of result codes and messages after commands.	
	ATQ	Return status: Result codes and messages are displayed.
	ATQ1	No display.
AT&R	CTS control. Determines the behavior of the CTS control line of the BlueTA+.	
	AT&R	CTS follows RTS
	AT&R1	CTS always ON.
ATS	Displays and sets internal S register values	
	ATS<nn>?	Shows the actual value of register <nn> in decimal notation.
	ATS<nn>=<xx>	Sets register <nn> to <xx> in decimal notation.
AT&S	DSR control. Determines the behavior of the DSR control line of the BlueTA+.	
	AT&S	DSR always ON.
	AT&S1	If DSR is ON, this indicates that an ISDN connection has been established and synchronized.
ATV	Determines the format in which result codes and messages are displayed.	

Command	**Explanation** (defaults in **boldface**)	
	ATV	Numeric format (followed by 8)
	ATV1	Text format
AT&V	Shows the current configuration.	
	AT&V	Shows the basic AT command settings.
	AT&V1	Shows the current configuration as defined by extended AT commands.
ATW	Determines if and how extended result codes are displayed.	
	ATW	Results are displayed in the form of extended result codes.
	ATW1	Results are displayed in the form of extended result codes. Other displays: RING and CONNECT including the ISDN number, and RINGING and all other messages including error messages.
AT&W	Stores the current settings so they are automatically reapplied even if the device is turned off and back on again.	
ATX	Reduces the amount of displayed result codes and messages after attempting to establish a connection.	
	ATX0	Displays CONNECT (without transfer rate)
	ATX1	Displays CONNECT (with transfer rate). Not BUSY or NO DIALTONE
	ATX2	Displays CONNECT (with transfer rate). Not BUSY.
	ATX3	Displays CONNECT (with transfer rate). Not NO DIALTONE.
	ATX4	Displays CONNECT (with transfer rate), plus all other messages.
ATZ	Loads and activates the configuration saved. (Must be the last command in a multiple command line.)	
AT**MSNI	Determines the incoming MSN for the BlueTA+, i.e. the number under which the BlueTA+ can be called.	
	ATMSNI=***	All incoming calls will be accepted independent of the called msn.
	AT**MSNI=<MSN>	Assigns the number <MSN> to the BlueTA+, only calls to that numbers can be accepted.
	AT**MSNI	Shows the MSN assigned to the BlueTA+.
AT**MSNO	Determines the outgoing MSN for the BlueTA+, i.e. this ISDN number will be presented at the called site.	
	ATMSNO=-**	No specific msn is sent with an outgoing call, the main msn of the ISDN access will be presented.
	AT**MSNO=<MSN>	Assigns the number <MSN> to the BlueTA+.
	AT**MSNO	Shows the MSN assigned to the BlueTA+.
	Notes:	
	The assigned MSN is stored automatically. The AT&W command does not have to be issued.	

ISDN-specific AT commands for setting special ISDN parameters

Only one command is allowed per command line.

Items in angled brackets < > are to be replaced by the actual or desired values or parameters. The angled brackets themselves are not entered.

Command	Explanation	
AT**BSIZE	Determines the maximum block length for sending and receiving via the B channel. Default: BSIZE=2048 AT**BSIZE=<x> sets the block length to <x>. Changing the B-channel protocol with the ATB command changes this block length.	
AT**ISDN	Selects the D-channel protocol for the ISDN connection. The selected protocol must be the same one the ISDN network operator uses. Otherwise, no connection can be established. Note: After changing and saving the ISDN protocol for the BlueTA+, you must cycle the BlueTA+ off and on to initialize it or reset it with the AT**RESET command.	
	ATISDN=0**	Selects DSS1 (Euro ISDN)
	AT**ISDN=5	Selects Bellcore National ISDN 1/2 (USA) (option)
	AT**ISDN=6	Selects NTT INS-NET (Japan) (option)
	AT**ISDN=7	Selects AT&T 5ESS (USA) (option)
	AT**ISDN=8	Selects VN-4 (France) (option)
	AT**ISDN	Shows which ISDN protocol is in use.
	AT**?ISDN	Shows which ISDN protocols are available.
AT**PROT	Selects the B-channel protocol.	
	ATPROT=3**	Conversion of HDLC asynchronous to synchronous (PPP asynchronous, single connection, e.g. for dial-up connection for network or Internet access).
	AT**PROT=4	HDLC transparent (Octets packaged in HDLC frames)
	AT**PROT=5	Byte-transparent (raw B channel data)
	AT**PROT=10	X.75-NL (e.g. for BBS access)
	AT**PROT=31	Multilink PPP (ML-PPP)
AT**PTP	Selects the ISDN interface type.	
	ATPTP=0**	Multipoint (for connecting ISDN terminal devices)
	AT**PTP=1	Point-to-point (for connecting ISDN relay systems or branch exchanges)
AT**RESET	Reset the adapter. Same as cycling the BlueTA+ off and on.	
AT**RPWD<nn>	Sets the remote configuration password to <nn> (32 character maximum). The factory default is that no password is set.	
AT**SPID1 AT**SPID2	In the U.S., the SPID value must be set for ISDN connections. You can obtain this value from your ISDN network operator.	
	AT**SPID1=<xxxx>	Sets the value for SPID1.
	AT**SPID2=<xxxx>	Sets the value for SPID2.

AT commands for setting S register values

Use the following command to assign specific values to S registers:

ATS<nn>=<xx>

where <nn> indicates the number of the S register in question and <xx> the value (in decimal notation) to which it is to be set.

Register	Content or possible content	
S0	S0=0	Calls are not answered automatically. Call answering is controlled by the data terminal device (ATA command following RING).
	S0=1	Calls are immediately answered by the terminal adapter.
	S0=2 ..n	Internally converted to 1.
S91	**S91=0**	
	S91=1	All unknown AT commands are acknowledged by OK.
	S91=2	Windows 2000 compatibility: Some AT commands are acknowledged with OK (see list below), and unknown AT commands are also acknowledged with OK.

Modified AT command behavior for Windows 2000 compatibility

Command	Modification for Windows 2000
ATB	All ATB commands for selecting the B-channel protocol are acknowledged with OK despite the fact that they have no effect. The B channel protocol can be selected using the AT**PROT command.

3.3.6 AT result codes

When commands are issued or during operation, the BlueTA+ may issue the following messages:

Code (num.)	Code (text)	Meaning
0	OK	Command executed
1	CONNECT	Connection established.
2	RING	Incoming call
3	NO CARRIER	No synchronization.
4	ERROR	Invalid command or error that cannot be specified in any other way.
6	NO DIALTONE	No access to ISDN network.
7	BUSY	Remote system busy.
8	NO ANSWER	No connection; the remote system cannot be reached.

Code (num.)	Code (text)	Meaning
19	CONNECT 64000	Connection established, transfer rate is 64 Kbps.

3.4 ISDN remote configuration

You may use a remote computer to configure your local BlueTA+ via an ISDN connection as long as the remote system also uses a BlueTA+ or other terminal adapter by Stollmann to establish the connection. To dial into the local BlueTA+, use the AT command **AT<number>e** (for <number>, insert the ISDN number of your local BlueTA+ without the angled brackets < >.)

The "e" at the end of the number tells the local BlueTA+ that remote configuration is about to take place.

Any BlueTA+Configuration command (see below) issued by the remote system after the connection is established will take effect for the local BlueTA+.

Note: The X.75 (ATB10) protocol must be used for remote configuration.

3.4.1 Guidelines for BlueTA+Configuration commands

Type each command exactly as shown, then press the Return key, which is represented in the following examples by the graphic character "8".

Example:

prot=10 8 Switches to the X.75 protocol
save 8 Store the new configuration

BlueTA+ acknowledges receipt of a command at ISDN settings with either a "#" or an error message.

Every command may be followed by one or more parameters. Each command line can be up to 80 characters long. Longer command lines are not accepted. Spaces are ignored. Uppercase and lowercase letters can be used interchangeably. With the Backspace key you can delete characters inside a command line.

Storing a configuration

To store configuration settings, issue the command **save**.

This will store the current setting in the BlueTA+ memory so they are automatically reapplied even if the device is turned off and back on again.

3.4.2 BlueTA+Configuration commands

In the following tables, factory default settings are indicated in **boldface**.

Items in angled brackets < > are to be replaced by the actual or desired values or parameters. The angled brackets themselves are not entered. Example: For <old_PIN_code> enter the old PIN code.

A detailed description of all possible settings is given under "Configuring using the BlueTA+" on page 11.

Command	Explanation
BPIN=<old_PIN-code>,<new_PIN_code> Changes the PIN code. For <old_PIN_code>, enter the old pin code. For <new_PIN_code>, enter the new pin code. The old PIN code must be correct for the command to take effect. The factory default Bluetooth PIN code is **0000**, 4 digit number.	
BPIN?	Displays help for Bluetooth PIN codes.
BNAME	Displays the device name.
BNAME=<name>	Defines the device name. <name> is shown on a remote Bluetooth terminal device during a Service Discovery sequence It is a string constant according to V.250.
BNAME?	Displays help for assigning device names.
BLDEL=<n>	Deletes the settings for log-on slot n (n=1..10).
BLDEL?	Displays help for log-on slots.
BRESTR	Displays the current setting restricted mode.
BRESTR=2	Activates restricted mode.
BRESTR=1	Activates limited mode.
BRESTR=0	Activates non-protected mode.
BRESTR?	Displays help for security modes.

4 Firmware updates

4.1 Updating the BlueTA+ firmware

How the BlueTA+ works is determined by the firmware stored in the BlueTA+ Flash PROM. If the manufacturer releases a new version of this software, you may obtain this new version from your dealer or on the Internet. Store the software on your PC for subsequent uploading to the BlueTA+.

To upload the software to your BlueTA+, proceed as follows.

You have two ways to update the BlueTA+ firmware:

- via a Bluetooth link
- via an ISDN connection

4.2 Updating the BlueTA+ firmware via Bluetooth

Updating the BlueTA+ firmware using BlueTA+Manager

You can use the BlueTA+Manager to update the BlueTA+ via a Bluetooth link. You will find a firmware update button on the general settings page. Please refer to page 11 how to use the BlueTA+Manager.

Updating the BlueTA+ firmware using AT commands

Additionally you can update the firmware using a terminal emulation with the control of AT commands. Please follow the listed steps:

1. Establish the Bluetooth connection to the BlueTA+.
2. Start any terminal emulation program that supports the Xmodem-1K data transfer protocol – such as HyperTerminal (included with Windows).
3. If no connection with the BlueTA+ has been defined in this program, do so now:

   Select a direct connection via the virtual interface by which your Bluetooth adapter is addressed.

   Connection settings (transfer rate, data bits, parity, stop bits) can be selected at random; they make no difference.
4. Activate the connection with the BlueTA+ by entering AT and the Return key.
5. Enter the following AT command: **AT**FWLOAD**
   Note: The actual firmware will not yet be overwritten by this command!
6. Wait until the EPROM storage area has been erased and you are prompted to upload the software using the Xmodem-1K data transfer protocol.
7. Issue the upload command (“transfer file”), and select the file name of the new firmware version.
8. Once the data transfer is completed, you will receive a (success or error) message.
   (If an error has occurred, repeat the transfer process.)

9. To activate the new firmware, enter the command **AT**FWSTART** when prompted.
   Note: Issuing this command will overwrite the actual firmware!
10. The new firmware will be activated after app. 20 seconds and includes an automatic reset of the BlueTA+.

Due to new functions in the new firmware version, it might be that the most recently stored configuration had to be deleted automatically by the firmware update.

To restore the standard settings, issue the **AT&F1** command.

4.3 Updating the BlueTA+ firmware via ISDN

1. Establish an ISDN connection to the BlueTA+.
2. Start any terminal emulation program that supports the Xmodem-1K data transfer protocol – such as HyperTerminal (included with Windows).
3. Enter the following command: **FWLOAD**
   Note: The actual firmware will not yet be overwritten by this command!
4. Wait until the EPROM storage area has been erased and you are prompted to upload the software using the Xmodem-1K data transfer protocol.
5. Issue the upload command (“transfer file”), and select the file name of the new firmware version.
6. Once the data transfer is completed, you will receive a (success or error) message.
   (If an error has occurred, repeat the transfer process.)
7. To activate the new firmware, enter the command **FWSTART** when prompted.
   Note: Issuing this command will overwrite the actual firmware!
8. The new firmware will be activated after app. 20 seconds and includes an automatic reset of the BlueTA+.

Due to new functions in the new firmware version, it might be that the most recently stored configuration had to be deleted automatically by the firmware update.

To restore the standard settings, issue the **AT&F1** command.

5 Error messages and diagnosis

5.1 Trouble Shooting

Effect	Cause	Check	Action
Hardware			
All LEDs off	No power	Power supply has to be connected	Check the connection at wall socket and the BlueTA+
	device defect	Power supply, cable	exchange device
Bluetooth			
Inquiry Scan fails (device is not detected)	Scan was mistaken	Scan has to be ok	repeat Inquiry Scan
	another Bluetooth device has a connection to the BlueTA+	BlueTA+ will be detected while scanning only if it is not connected to any other Bluetooth device	disconnect the Bluetooth connection and repeat the Inquiry Scan
	BlueTA+ is covered by metal	BlueTA+ must not be covered by metal, because this way the radiation can be disturbed significantly.	Keep BlueTA+ away from metal
Bluetooth LED (green) continously off	Bluetooth initialisation was mistaken	Bluetooth initialisation is mendatory	disconnetc the device from power and connect again
	Bluetooth-Modul defect	Bluetooth-Modul has to be operational	exchange device
Registeration of a Bluetooth device is not possible	BlueTA+ is not in mode for registeration	Bluetooth LED (green) must pulse blink	press pushbutton in restricted mode, to enable mode for registeration or switch to limited mode
	PIN wrong	check PIN	type in PIN again
set up of connection impossible	Bluetooth-device os not registered	The Bluetooth device you want to connect with the BlueTA+ has to registered if you oparating the BueTA+ in the limited or restricted mode	register the Bluetooth device
ISDN			
no ISDN connection for incoming or outgoing calls	Protocoll for D channel is incompatibel	Protocoll for D channel must be DSS1	ask your ISDN service provider for the D channel protocoll

	ISDN access defect or not connected properly	ISDN LED is off or blinking ager outgoing call	check the connection of the ISDN cable with your BlueTA+ and with the NT. Check, if the ISDN line is activated
	Hardware defect	ISDN LED is off or blinking ager outgoing call	exchange device
ISDN connection to a dedicated server is not possible	Protocoll of the B channel is not compatible	Protocoll of the B channel (X.75, ML/PPP) has to be the same on both sides of the connection	ask your ISDN service provider for the B channel protocoll
	Incompatible ISDN services	ISDN service for data and voice have to be the same on both siodes of the connection	ask your ISDN service provider for the ISDN services
	Incompatible application protocolls	application protocolls (EFT, TCP/IP, Fax) have to be the same on both siodes of the connection	ask your ISDN service provider for the application protocolls

5.2 General error conditions

The LED on the front panel of the BlueTA+ can indicate general error messages. See "LEDs and pushbuttons" on page 5.

5.3 Error messages as responses to AT commands

If enabled (ATW1) the result message of the AT dialing command (ATD<ISDN number>) will be enhanced with an error code. ISDN error codes starting with the prefix 34xx are listed in the following table ISDN error Causes. All other error codes are listed in the table CAPI Error Cause.

5.3.1 ISDN error causes and meanings (DSS1)

Error cause (decimal / hexadecimal notation)	Meaning	Generated AT result codes
1 / 0x81	Unallocated (unassigned) number	3
2 / 0x82	No route to transit network	3
3 / 0x83	No route to destination	3
6 / 0x86	Channel unacceptable	6
7 / 0x87	Call awarded and being delivered in an	6

Error cause (decimal / hexadecimal notation)	Meaning	Generated AT result codes
	established channel	
16 / 0x90	Normal clearing	3
17 / 0x91	User busy	7
18 / 0x92	No user responding	8
19 / 0x93	No answer from user (user alerted)	8
20 / 0x94	No answer from user (device off)	8
21 / 0x95	Call rejected	8
22 / 0x96	Number changed	3
26 / 0x9A	Non selected user clearing	3
27 / 0x9B	Destination out of order	8
28 / 0x9C	Invalid number format	3
29 / 0x9D	Facility rejected	3
30 / 0x9E	Response to STATUS ENQUIRY	3
31 / 0x9F	Normal disconnect, unspecified	3
34 / 0xA2	No circuit/channel available	7
38 / 0xA6	ISDN network out of order	6
41 / 0xA9	Temporarily failure	6
43 / 0xAB	Access information discarded	6
44 / 0xAC	Requested circuit/channel not available	6
46 / 0xAE	Precedence call blocked	6
47 / 0xAF	Resource unavailable, unspecified	6
49 / 0xB1	Quality of service unavailable	3
50 / 0xB2	Requested facility not subscribed	3
53 / 0xB5	Outgoing calls barred within CUG	3
55 / 0xB7	Incoming calls barred within CUG	3
57 / 0xB9	Bearer capability not authorized	3
58 / 0xBA	Bearer capability not presently available	3
63 / 0xBF	Service or option not available, unspecified	3
65 / 0xC1	Bearer capability not implemented	3
66 / 0xC2	Channel type not implemented	3
69 / 0xC5	Requested facility not implemented	3
70 / 0xC6	Only restricted digital information bearer capability is available	3
79 / 0xCF	Service or option not implemented, unspecified	3
81 / 0xD1	Invalid call reference value	3
82 / 0xD2	Identified channel does not exist	3
83 / 0xD3	A suspended call exists, but this call identity does not	3
84 / 0xD4	Call identity in use	3
85 / 0xD5	No call suspended	3
86 / 0xD6	Call having the requested call identity has been cleared	
87 / 0xD7	User not member of CUG	3

Error cause (decimal / hexadecimal notation)	Meaning	Generated AT result codes
88 / 0xD8	Incompatible destination	3
90 / 0xDA	Non-existent CUG	3
91 / 0xDB	Invalid transit network selection	3
95 / 0xDF	Invalid message, unspecified	3
96 / 0xE0	Mandatory information element missing	3
97 / 0xE1	Message type non-existent or not implemented	3
98 / 0xE2	Message not compatible with call state or message type non-existent or not implemented	3
99 / 0xE3	Information element /parameter non-existent or not implemented	3
100 / 0xE4	Invalid information element contents	3
101 / 0xE5	Message not compatible with call state	3
102 / 0xE6	Recovery on timer expiry	3
103 / 0xE7	Parameter non-existent or not implemented, passed on	3
111 / 0xEF	Protocol error, unspecified	6
127 / 0xFF	Network interworking error, unspecified	6

5.3.2 CAPI error causes and meanings

CAPI error cause (hex notation)	Meaning
0000	No error
0001	NCPI ignored
0002	Flags ignored
0003	Alert already sent
1001	Too many applications
1002	Logical block size too small
1003	Buffer exceeds 64 kB
1004	Message buffer size too small
1005	Too many logical connections
1006	Reserved1
1007	Message could not be accepted
1008	Register OS resource error
100a	External equipment not supported
100b	External equipment only
1101	Bad application ID
1102	Illegal command or message length
1103	Message queue full
1104	Message queue empty

CAPI error cause (hex notation)	Meaning
1105	Message lost
1106	Unknown notification
1107	Message not accepted
1108	OS Resource Error
1109	CAPI not installed
2001	Bad state
2002	Illegal identifier
2003	Out of PLCI
2004	Out of NCCI
2005	Out of LISTEN
2006	Out of fax resources
2007	Illegal Message Parameters
3001	B1 protocol not supported
3002	B2 protocol not supported
3003	B3 protocol not supported
3004	B1 protocol parameter not supported
3005	B2 protocol parameter not supported
3006	B3 protocol parameter not supported
3007	B Prot combination not supported
3008	NCPI not supported
3009	Unknown CIP value
300a	Flags not supported
300b	Facility not supported
300c	Data length not supported
300d	Reset procedure not supported
3301	Layer 1 protocol error
3302	Layer 2 protocol error, i.e. DTE address incorrect, TEI incorrect
3303	Layer 3 protocol error
3304	Another application got the call
3311	Fax remote station is not fax
3312	Fax training failed
3313	Fax disconnect before transfer
3314	Fax disconnect remote abort
3315	Fax disconnect remote procedure
3316	Fax disconnect local transmitter underrun
3317	Fax disconnect local receiver overflow
3318	Fax disconnect local abort
3319	Fax illegal transmit data

6 Appendix

6.1 Technical specifications

Bluetooth channels	1 ACL channel
Bluetooth transfer rate	Up to 768 Kbps asynchronous, asymmetrical
Bluetooth RF	0 dBm Radio appr. 10 m (Bluetooth Power Class 3)
Bluetooth Version	Bluetooth Spec: 1.0 B (1.12.1999) Flowcontrol credit based
B-channel transfer rate	64 Kbps
Bluetooth profile	Dial-up Networking profile
Operation	Full duplex
ISDN interface	Base rate interface as per ITU I.430 (RJ45)
External dimensions	W x H x D: 100 x 20 x 170 mm

6.2 ISDN Pin assignments

The RJ45 contact pins (ITU I.430/ISO 8877) are assigned as follows:

Pin	**Signal (S_0)**
1	Not connected
2	Not connected
3	Tx+ (Transmit +)
4	Rx+ (Receive +)
5	Rx– (Receive –)
6	Tx– (Transmit –)
7	Not connected
8	Not connected

7 Glossary

Basic rate interface (BRI)

A term for the line that goes from the ISDN network operator's terminal unit or NTBA to the ISDN devices (e.g. ISDN phone, terminal adapter, ISDN PBX). Follows the ITU specification I.430.

Bit Rate Adaptation

Adaptation of the transfer rate of a serial data stream to an ISDN channel (64 Kbps)

Bluetooth

The name "Bluetooth" goes back to a Viking king by the name of Harald. It was Harald who "united" what is today Denmark and Norway, back in the 10th century C.E. He also loved to eat blueberries, which left him with blue teeth, whence his name – Bluetooth. Today Bluetooth is an open specification for wireless voice and data communications at close range. Bluetooth permits ad-hoc connections between stationary and mobile communications devices, for example between a PC and a data transfer device such as BlueTA+. Cables often get in the way or entangled when connecting peripheral devices. Bluetooth makes such cables obsolete.

COM Port

Communications port. A name for the serial PC interface for connecting devices such as a modem or mouse.

Dial-Up

Establishing a connection on a case-by-case basis by dialing the number of the remote system

D-Channel Protocol

Transfer protocol for data transfer through the D channel (control channel) of an ISDN line. Newer ISDN lines in Germany use EURO-ISDN (E-DSS1 or simply DSS1). Older ISDN lines or ISDN connections via certain ISDN PBXs sometimes still use 1TR6 as D-channel protocol. If the wrong D-channel protocol is selected, the ISDN network operator's local exchange will not be able to interpret the requests issued by your ISDN device, and no connection can be established. In this case, the D-channel level connection is interrupted, and error 3307 is issued.

ISDN

Integrated Services Digital Network.

ISDN Basic Access

An ISDN connection type. The ISDN network operator (telephone company) provides 2 B channels with 64 Kbps each and one D channel (for control purposes) with 16 Kbps. This means that two connections can exist at the same time. For example, it is possible to make two phone calls at the same time. There are two varieties of basic access, namely point-to-point and multipoint.

ITU

International Telecommunications Union.

ITU-TS

International Telecommunications Union, Telecommunications Standardization Sector.

Multipoint Access

A variant of the Euro-ISDN basic access. With multipoint access, all devices (e.g. ISDN phones, terminal adapters, PBXs) are connected to the S_0 bus of the ISDN line. The ISDN network operator assigns several numbers to this access point. These are called multiple subscriber numbers or MSNs. If a PBX is connected, the devices on the PBX are not identified by fixed extension numbers. Rather, the PBX determines what MSNs a device is to respond to.

MSN

Multiple Subscriber Number. Every ISDN line is "known" under several phone numbers that the user can assign to different devices (phone, fax, etc.) which can then be reached directly under these numbers.

PPP

Point to Point Protocol. A transfer method for serial point-to-point connections for data packets, especially for Internet access via modem.

RAS

Remote Access Services. Term for the Windows programming interface and its functions that the Dial-Up Networking service makes available to application programs. RAS allows applications that expect to be working across a network, e.g. a TCP/IP network, to establish a connection via TAPI and a modem. The application will be unaware that the data are not coming in on a NIC but by telephone, via a modem or other transfer device. In Dial-Up Networking (Windows), specific connections are defined for this purpose. Each of these connections has its own connection data saved. These data determine, for instance, what modem will establish the connection, and which networking protocol will be available the application once the connection is established.

S bus

A term for the line that goes from the ISDN network operator’s terminal unit or NTBA to the ISDN devices (e.g. ISDN phone, terminal adapter, ISDN PBX). Follows the ITU specification I.430.

Service Provider

Company, organization or other institution that provides users access to the Internet or an online service.

TAPI

Telephony Application Interface. Programming interface for data, voice, and fax applications. Terminal emulation programs under Windows use this collection of functions to communicate e.g. with modems. That a terminal emulation program uses the TAPI can be seen by the fact that it selects a modem and not a COM port. These modems are configured once and can then be used by different programs.

TCP/IP

Transmission Control Protocol/Internet Protocol. Two networking protocols used for connecting two hosts (computers) on the Internet. IP provides the basic mechanisms for transmitting data packages. TCP serves to ensure that the connection is maintained and that the data

packets are passed to the application in the correct order. On Windows PCs, the *winsock.dll* or *wsock32.dll* files implement these protocols.

Transfer Protocol

Devices that communicate must apply the same rules to do so. They must "speak the same language." These rules and standards are called (transfer) protocols. Frequently used protocols are e.g. TCP/IP or PPP.

V.120

Method for bit rate adaptation with error correction

X.75

Data transfer protocol for bit rate adaptation with error correction.

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